



# Standards Update Notice (SUN)

Issued: January 29, 2016

## Standard Information

**Standard Number:** CSA C22.2 No. 31  
**Standard Name:** Switchgear assemblies  
**Standard Edition and Issue Date:** 10<sup>th</sup> Edition Dated March 1, 2014  
**Date of Revisions:** 10<sup>th</sup> Edition Issued March 1, 2014  
**Date of Previous Revisions to Standard:** 9<sup>th</sup> Edition Issued September 1, 2010

## Effective Date of New/Revised Requirements

**Effective Date (see Processing Schedule below):** **January 31, 2017**

## Impact, Overview, Fees and Action Required

**Impact Statement:** A review of all Listing Reports is necessary to determine which products comply with new/revised requirements and which products will require re-evaluation. **NOTE:** Effective immediately, this revised standard will be exclusively used for evaluation of new products unless the Applicant requests in writing that current requirements be used along with their understanding that their listings will be withdrawn on Effective Date of **January 31, 2017** unless the product is found to comply with new/revised requirements.

**Overview of Changes:** Additional marking requirements for field installed power cables, Additional test requirements for field installed power cables using 90°C conductor insulation, Addition of reference to TIL D-34, Interim Certification Requirements for Low Voltage Power Circuit Breakers, Addition of new Annex F to replace TIL D-25 Interim Requirements for Pressurized Gas Insulated Switchgear, Additional requirements for polymeric viewing windows used with gas-insulated switchgear assemblies, New requirements for alternate viewing systems (cameras) used with gas-insulated switchgear, New leakage requirements for gas-insulated switchgear assemblies; and New test requirements for gas-insulated switchgear assemblies.. Specific details of new/revised requirements are found in table below.

**If the applicable requirements noted in the table are not described in your report(s), these requirements will need to be confirmed as met and added to your report(s) such as markings, instructions, test results, etc. (as required).**

**Processing Schedule:** So that production of products bearing Listing Marks will not be interrupted, the following schedule of **approximate** dates has been established to ensure Listing Reports are found compliant by Effective Date:

- May 31, 2016 = 8 Month Report Review – Intertek will review all Reports. Update if compliance is verified or issue Findings Letter/Quote for any re-evaluations needed
- July 29, 2016 = 6 Month Quote Cut-off – Quotes returned for necessary re-evaluations
- December 30, 2016 = 30 Day Warning – Client advised of all non-compliant Reports to be Suspended
- **January 31, 2017** = Effective Date – ATM Suspended for all non-compliant Reports

**Fees:** An initial review of Listing Report (s) will be covered by a direct billing project and will be invoiced at not more than \$1000 per report.

### Client Action Required:

**Information** – To assist our Intertek Engineer with review of your Certification Reports, please submit technical information in response to the new/revised paragraphs noted in the attached or explain why these new/revised requirements not apply to your product (s).

**Current Listings Not Active? – Please immediately identify any current Listing Reports or products that are no longer active and should be removed from our records. We will do this at no charge as long as Intertek is notified in writing prior to the review of your reports.**

## Description of New/Revised Technical Requirements

Clause	Verdict	Comment
7.3.3		The allowable amperage of field installed conductors (the incoming and outgoing power outgoing power cables) shall be marked permanently on the equipment in a location readily visible prior to wiring, to indicate the permitted temperature rating of each conductor, with the following or equivalent wording:
7.2.6.2		Additional test requirements for field installed power cables using 90°C conductor insulation; per the note:  <b>Note:</b> For example, a 1000 A circuit breaker is rated for a maximum of 75 °C amperage cables. Incoming or outgoing cables connected directly to the circuit breaker cannot exceed the allowable amperage for 75 °C cables. If those cables instead connect to a length of bus and then the bus is connected to the circuit breaker, then provided that the bus is of a suitable length and cross-section to dissipate sufficient heat and if testing proves the termination temperature at the circuit breaker does not exceed 75 °C, 90 °C amperage cables could be used to connect to the bus.
Annex F		Addition of Annex F (replaced reference to TIL D-25) which describes requirements for Pressurized gas insulated switchgear
F.4.2	-	<b>Viewing windows</b> Additional requirements for polymeric viewing windows used with gas-insulated switchgear assemblies;
F.4.2.1 F.4.2.2		<b>F.4.2.1</b> Material shall be one of the following alternatives: a) safety glass; or b) clear transparent acrylic with no colour shading, with a minimum thickness of 6 mm (0.25 in). <b>F.4.2.2</b> When clear transparent acrylic is used, a permanently attached cover shall be supplied to protect the acrylic from dirt and scratching. The cover shall include the following features: a) The fastening device for the cover when closed shall be easily released by hand without the use of a tool. b) The cover shall stay open by gravity. c) The cover shall be easily closed by hand and the fastening device for the cover shall be easily secured by hand to ensure the cover remains closed. d) The cover when closed shall have a permanent label in English and French: "Viewing Window for Contacts — Open Cover" and "Hublot d'observation des contacts — Ouvrir le couvercle".



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Clause	Verdict	Comment
F.4.3	-	<b>Alternate switch contact viewing systems</b>
F.4.3.1		This section provides supplementary information on alternate switch contact viewing systems to allow an operator to visually confirm that the switch contacts for isolating switches, load interrupter switches and grounding switches are visible in the open and closed position.
F.4.3.2		In order to provide a view of the switch contacts, a video camera system shall be permitted to be used in place of a direct viewing window provided it meets the criteria specified in Clauses <a href="#">F.4.3.5</a> through <a href="#">F.4.3.11</a> .
F.4.3.3		The camera shall be a video type with real-time output available so that the user can confirm the movement and position of the switch. The video camera shall have the following features: a) It shall be electromagnetically shielded for use in a high-voltage environment. b) It shall have an operating temperature range not less than $-5\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$ for indoor equipment. c) It shall have a minimum MTBF (mean time between failures) of 150 000 h.
F.4.3.4		The camera, the viewing system, and its light source shall be capable of being supplied with power from a portable external source in addition to its normal power source.
F.4.3.5		The camera output shall show all phase contacts of the switch in the same view. In the case of isolated phase construction, and where the phases of the switch operate from a common operating shaft, three cameras shall be used to show all phase contacts of the switch in sequence.
F.4.3.6		Means shall be provided to confirm that the switch being viewed is the intended switch. Examples of methods used to ensure compliance are as follows: a) use of a dedicated plug-in connection port for each switch in each cell, with the connection port(s) physically located on that cell so that a viewing device (e.g., a notebook computer) is plugged into the unique connection port to view each switch in that cell (see also Clauses <a href="#">F.4.3.9</a> and <a href="#">F.6.5.3</a> ); or b) the switch itself shall be identified clearly by a marking located either on the switch or in close proximity to the switch, such that the camera system views the switch identification at the same time it views the switch contacts (see also Clauses <a href="#">F.4.3.10</a> and <a href="#">F.6.5.4</a> ).
F.4.3.7		There shall not be more than one switch in the field of view of any one camera.
F.4.3.8		The view of the contacts and the switch identification marking (if present) shall be illuminated by a long-life light source(s). <b>Note:</b> <i>An LED light source is one example of a long-life device. Multiple emitters in the LED assembly will increase the probability that the light source will last at least as long as the overall equipment.</i>
F.4.3.9		If a dedicated connection port system is used [see Clause <a href="#">F.4.3.6</a> a)], then each connection port on each cell shall be clearly marked with the switch designation or function.



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F.4.3.10		<p>If a switch has been marked for identification [see Clause <a href="#">F.4.3.6 b</a>], then</p> <p>a) the identification marking shall be unique to each switch in the switchgear assembly;  <b>Note:</b> <i>The manufacturer may supply the nomenclature used for the switch identification marking if the customer does not supply their preferred marking nomenclature.</i></p> <p>b) the switch identification marking on each switch shall be of sufficient font size and of sufficient contrast with its background to be clearly legible using the camera viewing system supplied; and</p> <p>c) the switch identification marking used on each switch in each cubicle shall also be permanently marked on the front panel or door of that cubicle.</p>
F.4.3.11		<p>As part of the operating instructions provided for the gas insulated switchgear, the manufacturer shall provide</p> <p>a) instructions on how to safely shut down the switchgear or an appropriate portion of the switchgear should one or more cameras cease operation, or the switch illumination fails to operate;</p> <p>b) instructions on how to replace a defective camera; and</p> <p>c) instructions on how to replace a defective light source.</p>
F.4.3.12		<p>Where the viewing system replacement as discussed in Clause <a href="#">F.4.3.11</a> cannot be achieved without exposure to bare live parts, then a label shall be applied in accordance with Clause <a href="#">F.5.5</a>.</p>
F.4.4.10		<p>The maximum gas leakage of gas-filled compartments provided with a means for refilling shall be 1% per year as verified by Clause <a href="#">F.6.6</a>. The maximum gas leakage of gas-filled compartments of the sealed type intended not to be subjected to leakage shall be 0.1% per year as verified by Clause <a href="#">F.6.6</a>.</p>
F.6.5		<b>Camera system test (routine test)</b>
F.6.5.1		<p>Before equipment containing cameras is shipped, the requirements in Clauses <a href="#">F.6.5.2</a> to <a href="#">F.6.5.4</a> shall be verified.</p>
F.6.5.2		<p>Each switch shall be operated and the camera for that switch shall show the movement of the switch.</p>
F.6.5.3		<p>For designs where there is a dedicated connection port(s) on each cell,</p> <p>a) for each cubicle, the marking of each connection port on that cubicle panel or door shall correspond with the corresponding switch being viewed; and</p> <p>b) for each cubicle, the marking of each connection port on that cubicle panel or door shall match the switch identification shown on the single-line schematic of the switchgear.</p>
F.6.5.4		<p>For designs where the switch has been marked for identification through the camera viewing system,</p> <p>a) for each cubicle and for each switch that is to be viewable, the marking on the switch as seen by each camera view shall match the switch marking on that cubicle panel or door and shall also match the switch identification shown for that cubicle on the single-line schematic of the switchgear; and</p> <p>b) the marking on the switch(es) shall match the identification used on the central display or monitor (if provided).</p> <p><b>Note:</b> <i>The physical location of a central display or monitor may be on the switchgear or remote from it, in the interest of arc-flash and worker safety.</i></p>
		<p><b>CUSTOMERS PLEASE NOTE:</b> This Table and column "Verdict" can be used in determining how your current or future production is or will be in compliance with the new/revised requirements.</p>